

## NOTES ON BROMELIACEAE, XXXVIII

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During January 1975 the junior author, and Dr. Gilbert Daniels of the Hunt Institute for Botanical Documentation, spent several weeks collecting in Bahia, Brazil. The trip was planned in an attempt to observe Hohenbergia in its natural condition and collect representative specimens. Accordingly it was routed through several distinctive ecological zones, including wet coastal forest, transitional interior forest, and dry-upland or plan-alto. As a result a number of interesting bromeliads was seen and collected along the way.

Although several collectors had been in the same general area of Bahia in times past it would appear that because some bromeliads are often sharply toothed and formidable plants, many were avoided. Surmounting this obstacle several new species were collected by Drs. Read and Daniels in 1975. Several species found on the trip were previously known only from the original collection such as Hohenbergia disjuncta collected by Mulford and Racine Foster on their first trip to Brazil in 1939.

Grateful appreciation is acknowledged for the guidance and assistance graciously provided by Drs. Alvim and da Vinha of CEPEC at Itabuna, Bahia. The use of their vehicle and able assistants made the undertaking very much more successful than would otherwise have been possible. It should also be noted that the diverse and extraordinary living collection at the home of Sr. Roberto Burle-Marx near Rio de Janeiro also yielded several new species and several distinctive new forms of bromeliads. The latter will be published at a later date.

### PITCAIRNIOIDEAE

(Enumeration of Flora Neotropica, Monograph 14. 1974)

#### 1. PUYA

38a. P. EXUTA L. B. Smith & R. W. Read, sp. nov. A P. bicolor Mez, cui maxime affinis, omnibus partibus minoribus, inflorescentiae indumento grossiore manifeste stellato mox deciduo, bracteis primariis suborbicularibus differt.

PLANT flowering over 7 dm high. LEAVES to 53 cm long; sheaths suborbicular, 5 cm long, serrulate at apex; blades 20-25 mm wide, covered on both sides with appressed cinereous scales but soon glabrous above, laxly serrate with slender curved red-brown spines 5 mm long. SCAPE slender, soon glabrous; scape-bracts lax, broadly ovate, ca. 1 cm long, the lower ones with long linear sparsely serrate blades.

INFLORESCENCE laxly bipinnate, subcylindric, to 38 cm long, bearing stellate red-brown trichomes but nearly glabrous by

anthesis; primary bracts like the upper scape-bracts, sparsely serrulate; branches subspreading, ca. 3 cm long, subclaxly few-flowered, much exceeding the primary bracts. FLORAL BRACTS suborbicular, apiculate, entire, to 8 mm long, equaling or exceeding the pedicels at anthesis (paratype); flowers downwardly secund; pedicels slenderly clavate, elongating to 13 mm in fruit. SEPALS subsymmetric, elliptic-oblong, rounded, cucullate, 17 mm long, ecarinate; petals twisted together after anthesis. CAPSULE subglobose, 13 mm long. Pl. I, fig. A: Base of leaf; fig. B: Branch of inflorescence; fig. C: Sepal.

COLOMBIA: BOYACA: Common on dry rocky subparamo, with grasses, Espeletia pleiochasia var. socotana, Hypericum and Paepalanthus, Socha-Los Pinos, km 41, Filo del Alto 2 km north of Las Pilas, 4 km east northeast of Socha, 2970 m alt, 22 May 1973, Cleef 9873 (COL, holotype); same, 9873A (COL, paratype).

Puya exuta keys to the vicinity of P. bicolor Mez in Smith's The Bromeliaceae of Colombia (Contr. U. S. Nat. Herb. 33: 7. 1957) but does not in Smith & Downs, Flora Neotropica (Monograph no. 14: 67. 1974) because of its glabrescent inflorescence. The narrow endemism of most species of Puya would indicate that the secund flowers are a more important character and the position next to P. bicolor the correct one.

74a. P. CLEEFII L. B. Smith & R. W. Read, sp. nov. A P. grantii L. B. Smith, cui valde affinis, scapi bracteis omnibus imbricatis, bracteis florigeris tenuiter coriaceis haud rugosis, sepalis minoribus tenuioribus differt.

PLANT flowering to 44 cm high. LEAVES numerous, rosulate, to 26 cm long; sheaths ample, 3 cm long, glabrous; blades 10 mm wide, glabrous above, covered beneath with subappressed cinereous scales, glabrous above, laxly serrate with pale slender ascending 2.5 mm long spines. Scape erect, 4 mm thick at apex, finely white-flocculose, soon glabrous; scape-bracts imbricate, the lowest foliaceous, the upper broadly ovate, apiculate, blackish and subchartaceous when dry, glabrous, subchartaceous, obscurely serrulate near apex, not at all rugose. INFLORESCENCE erect, simple, to 18 cm long, lax, finely white-flocculose, almost completely glabrous at anthesis. FLORAL BRACTS like the upper scape-bracts, the lower ones equaling the sepals; flowers spreading to reflexed; pedicels slender, to 10 mm long. SEPALS lance-oblong, acute, 24 mm long, subchartaceous; petals bright green (! Cleef), twisted together after anthesis. Pl. I, fig. D: Leaf; fig. E: Flower and bract; fig. F: Sepal.

COLOMBIA: BOYACÁ: Very common in crevices of cliffs, associated with Masdevallia and Scaphosepalum, subparamo of Paramo Cóncavo, Sierra Nevada del Cocuy, 3700 m alt, 6 June 1973, Cleef 10020 (US, type; COL, U, isotypes).

82b. P. NITIDA Mez var. GLABRIOR L. B. Smith & R. W. Read, var. nov. A var. nitida inflorescentiae indumento laxo mox deciduo differt.

Inflorescence laxly vestite at anthesis, becoming nearly glabrous in fruit.

COLOMBIA: BOYACA: Subparamo on dry rocky slope in thicket

of Arcytophyllum nitidum and Gaylussacia buxifolia associated with Espeletia glandulosa, Paepalanthus and Cladonia spp., Páramo de Guina, Santa Rosita, 3300 m alt, 5 May 1973, Cleef 9740 (COL, holotype; U).

The character of indument used by Smith in The Bromeliaceae of Colombia (Contr. U. S. Nat. Herb. 33: 7. 1957) although striking between extremes is proving to be inefficient in a number of cases such as the above. It would have been better to have made the final primary distinction for P. nitida on its ample firm floral bracts.

137b. P. TRIANAE Baker var. AMPLIOR L. B. Smith & R. W. Read, var. nov. A var. trianae inflorescentia latiore, bracteis florigeris amplioribus differt.

INFLORESCENCE 8-10 cm wide. FLORAL BRACTS nearly glabrous above, the reflexed blade to 6 cm long and 4 cm wide.

COLOMBIA: BOYACÁ: On damp rocky soil, cerro 1 km east southeast of Laguna Agua Clara, Serrania Peña Negra, northwest to north of Duitama, Páramo de La Rusia, 3970 m alt, 18 Dec 1972, Cleef 7430 (US, type; COL, U, isotypes); páramo with Calamagrostis and Espeletia, southeast side of Cerro Pan d'Azucar, high massif north of Belén, Municipio Tutasá, 4100 m alt, 7 May 1973, Cleef 9818 (COL, U, US).

In var. trianae the inflorescence is about 6 cm wide and the floral bracts about 4 cm long with considerable indument above. However, there is too much intergrading to indicate a higher category of distinction.

146a. P. DICHROA L. B. Smith & R. W. Read, sp. nov. A P. venezuelana L. B. Smith, cui valde affinis, scapi bracteis subchartaceas, bicoloratis differt.

PLANT flowering over 4 dm high. LEAVES to 2 dm long; sheaths suborbicular, 4 cm long, glabrous, entire or serrulate toward apex; blades 20 mm wide, glabrous above, covered beneath with appressed cinereous scales, laxly serrate with spreading slender brown 2-3 mm long spines. SCAPE erect, slender, sparsely white-villous; scape-bracts erect, imbricate, suborbicular, subchartaceous, black and opaque when dry, the lower ones foliaceous-laminate, the upper apiculate and gray (probably green in life) toward apex. INFLORESCENCE nutant, simple, strobilate, ellipsoid, 10 cm long, 6 cm in diameter, very sparsely white-villous. FLORAL BRACTS like the upper scape-bracts, 3 cm long, exceeding the sepals; pedicels slenderly cylindrical, 6 mm long. SEPALS lanceolate, obtuse, 17 mm long, thin; petals ca. 4 cm long, dark blue (! Cleef); stamens included. Pl. I, fig. G: Leaf; fig. H: Flower; fig. I: Sepal.

COLOMBIA: BOYACA: Open rocky ground much exposed to wind and rain, Páramo de Pisva, Loma El Bizcocho, Morros de San Gabriel, ca. 2 km south southwest of Laguna Batanera, 3750 m alt, 18 June 1972, Cleef 4677 (COL, photo US).

## 8. PITCAIRNIA

101a. P. STOLONIFERA L. B. Smith & R. W. Read, sp. nov.

A P. violascente L. B. Smith, cui verisimiliter affinis, petalis rubris, pedicellis subduplo brevioribus, stolonibus auctis differt.

PLANT stemless but long-stoloniferous, flowering 55 cm high. LEAVES polymorphic, the outermost with small orbicular dark castaneous sheaths and short spiniform pectinate-serrate blades, grading upward into larger entire bladeless elliptic sheaths, the innermost functional, over 3 dm long; blades deciduous, linear, attenuate toward base and apex but not petiolate, to 20 mm wide, entire, soon glabrous. SCAPE erect, slender, soon glabrous; scape-bracts erect, longer than the internodes, the lower foliaceous, the upper lance-ovate, filiform-attenuate. INFLORESCENCE simple, laxly few-flowered, nearly glabrous at anthesis. FLORAL BRACTS broadly ovate, acuminate, exceeding the slender 10 mm long pedicels. SEPALs narrowly lanceolate, acute, 32 mm long, carinate with keels decurrent on the ovary; petals linear, broadly acute, naked, red; stamens included; ovary  $2/3$  superior; ovules caudate. Pl. I, fig. J: Flower and bract; fig. K: Sepal.

PERU: AMAZONAS: Pongará: Yambrasbamba: Epiphytic in second growth, km 62, above Buenos Aires, across Río Chiriaco from Yambrasbamba, 1860-2000 m alt, March 1967, S. Tillett 673-275 (US, holotype; GH, isotype).

#### BROMELIOIDEAE

#### AECHMEA

AE. STROBILINA (Beurling) L. B. Smith & R. W. Read, comb. nov. Bromelia strobilina Beurling, Svensk. Vet. Akad. Handl. for 1854: 110. 1854.

PLANT flowering ca. 4 dm high. LEAVES at least 4 dm long; sheaths unknown; blades ligulate, 5-7 cm wide, subdensely serrate with spreading to ascending, subulate, black, lustrous, 4-6 mm long spines. SCAPE straight or nearly so, 7 mm thick at least; scape-bracts tubular-imbricate, lanceolate, attenuate, entire. INFLORESCENCE densely bipinnate from 8-9 spikes; primary bracts like the scape-bracts, shorter than the spikes and the upper ones greatly reduced; spikes sessile, lanceolate, acute, strongly complanate, 7-10 cm long, 25-30 mm wide. FLORAL BRACTS distichous, densely imbricate and completely concealing the angled rhachis, broadly ovate, acute, ca. 25 mm long, covering the sepals, carinate, coriaceous, smooth, lustrous; flowers sessile. SEPALs asymmetric, oblong, mucronulate, 15 mm long. Pl. I, fig. L: Leaf-apex; M: Spike; N: Flower.

PANAMA: COLÓN: "In rupibus marinis," Porto Bello, 1826, Billberg s n (S, holotype).

Aechmea strobilina is very closely related to Ae. dactylina Baker, differing chiefly in its broader spikes and much larger floral bracts and flowers.

AE. (Purpurospadix) DIGITATA L. B. Smith & R. W. Read,

sp. nov. A Ae. conifera L. B. Smith, cui affinis, inflorescentia digitata, bracteis florigeris haud angulatis, sepalis multo minoribus differt.

PLANT flowering over 6 dm high. LEAVES to 2 m long, rigid; sheaths narrowly ovate, scarcely distinct from the blades, ca. 15 cm long, entire, dark castaneous, covered with appressed brown scales; blades ligulate, narrowly acute to a stout spine, 10 cm wide, covered with a membrane of whitish scales, subdensely serrate with curved dark spines 5 mm long. SCAPE erect, stout, laxly brown-lepidote; scape-bracts densely imbricate, the lower subfoliaceous, the upper with greatly reduced blades but still green and serrulate toward apex. INFLORESCENCE digitate from 2-3 spikes; spikes sessile, strobilate, cylindric, to 32 cm long, 6 cm thick. FLORAL BRACTS suborbicular, apiculate, 4 cm long, entire, densely pale-lepidote but glabrous and punctulate by anthesis, orange-yellow turning brown to black, the apex divergent; flowers sessile, strongly complanate, broadly bialate, 43 mm long without the petals. SEPALS subtriangular, attenuate, pungent, 20 mm long, slightly exserted, punctulate, drying yellow brown, the posterior broadly carinate, the anterior flat, ecarinate; petals white at anthesis, naked (?); epigynous tube large. FRUIT much thickened from ovary.

BRAZIL: BAHIA: Epiphytic, low on trees, deciduous forest, with xeric Cryptanthus, Neoregelia wilsonii, 15.6 miles from Itape on road to Itaju da Colonia, 16 Jan 1975, Read & Daniels 3426 (US, type).

DISTEGANTHUS Lem. Fl. Serres 3: pl. 227. 1847. Aechmea sensu L. B. Smith in part, Phytologia 7: 109. 1960; 13: 147. 1966; 24: 432. 1972.

In reducing Disteganthus to Aechmea, Smith disregarded its pedicellate flowers, which would exclude it from subgenus Purpurospadix, where he placed it. To be sure Aechmea is a catch all and the addition of Disteganthus would bring no new characters to it, but its flowers are not those of Purpurospadix and it would seem best to reconstitute it as follows:

D. BASI-LATERALIS Lem. Fl. Serres 3: pl. 227. 1847. Aechmea basi-lateralis (Lem.) L. B. Smith, Phytologia 7: 109. 1960.

D. CALATHEOIDES (L. B. Smith) L. B. Smith & R. W. Read, comb. nov. Aechmea calatheoides L. B. Smith, Phytologia 13: 147. 1966.

HOHENBERGIA. Since Smith's revision of 16 Brazilian species (Smithsonian Misc. Coll. 126: 186. 1955), 2 have been reduced to synonymy due to breakdown of supposedly distinctive characters and 7 have been added, 6 of them here. A new key and additional citations seem desirable as follows:

1. Margins of the floral bracts spinose-serrulate; spikes aggregated in clusters that are mostly broader than long.
  1. H. brachycephala.
1. Margins of the floral bracts entire.
  2. Floral bracts acuminate to a spinose apex.

3. Inflorescence short, digitate or rarely simple.  
2. *H. littoralis*.
3. Inflorescence elongate, bipinnate or more usually 3-4-pinnate.
4. Posterior sepals and ovary broadly alate-carinate; spikes fascicled at the ends of the branches.
5. Floral bracts spreading, 20-30 mm long; sepals 15-18 mm long; lower branches to 8 cm long. Also from Tobago, Trinidad, and Venezuela. 3. *H. stellata*.
5. Floral bracts erect or suberect, 20 mm long; sepals 11 mm long; lower branches 1 cm long. 4. *H. rosea*.
4. Posterior sepals and ovary obtusely carinate, not at all alate; spikes lateral as well as terminal on the longer branches. 5. *H. catingae*.
2. Floral bracts broadly acute or obtuse, usually mucronate.
6. Spikes sessile on the main axis either singly or in fascicles.
7. Sepals 5-6.5 mm long with the wing extending above the midnerve; inflorescence pale-lanate.
8. Scape-bracts exceeding internodes; leaf-blades 4-7 cm wide. 6. *H. vestita*.
8. Scape-bracts shorter than the internodes; leaf-blades 1-2 cm wide. 7. *H. humilis*.
7. Sepals 9-13 mm long; inflorescence glabrous or nearly so.
9. Inflorescence bipinnate, the spikes all borne singly on the main axis.
10. Floral bracts mucronate; inflorescence 30 cm long; ovary broadly bialate. 8. *H. castellanosii*.
10. Floral bracts unarmed; inflorescence 5-10 cm long, ovary bicarinate. 9. *H. membranostrobilus*.
9. Inflorescence tripinnate, the lower spikes in fascicles on the main axis.
11. Scape-bracts densely imbricate; inflorescence dense, 9 cm long. 10. *H. belemii*.
11. Scape-bracts remote; inflorescence much interrupted, elongate. 11. *H. disjuncta*.
6. Spikes, or at least the lowest, on definite branches.
12. Inflorescence glabrous or nearly so; sepals 3.5-6 mm long.
13. Floral bracts 5-6 mm long; sepals 3.5-4 mm long; flowers spreading; spikes subdense.
14. Plants to 2.4 m high; sepals unarmed. 12. *H. blanchetii*.
14. Plants less than 5 dm high; sepals mucronulate. 13. *H. minor*.
13. Floral bracts 8-10 mm long; sepals 6 mm long; flowers suberect; spikes dense.
15. Plants to ca. 3 m high; sepals unarmed; spikes mostly cylindric. 14. *H. salzmanni*.
15. Plants less than 1.5 m high; sepals mucronulate; spikes ovoid. 15. *H. pabstii*.
12. Inflorescence persistently lanate.



16. Indument dark ferruginous; spikes globose, mostly exceeding the secondary bracts; sepals not auricled, 4.5 mm long, mucronulate. 16. H. augusta.
16. Indument very pale, white or yellowish; spikes cylindrical in most species.
17. Secondary bracts equaling or exceeding the globose spikes; sepals strongly mucronate, 5 mm long. 17. H. eriantha.
17. Secondary bracts shorter than the spikes.
18. Leaf-blades to 4 cm wide; scape-bracts shorter than the internodes; inflorescence subcylindric with short lower branches, 3-pinnate. 18. H. edmundoi.
18. Leaf-blades to 20 cm wide; scape-bracts mostly exceeding the internodes; inflorescence broadly pyramidal with long lower branches.
19. Sepals obtuse, 6 mm long. 19. H. utriculosa.
19. Sepals distinctly mucronulate.
20. Floral bracts 8 mm long; sepals much exerted. 20. H. ramageana.
20. Floral bracts 11-15 mm long; sepals included before anthesis, slightly exerted afterward. 21. H. ridleyi.

1. H. BRACHYCEPHALA L. B. Smith, Contr. Gray Herb. 129: 32, pl. 3, figs. 14-16. 1940.

BRAZIL: BAHIA: Ilhéus, 23 Feb 1968, Vinha 129 (UB, US); Itabuna, 15 Jan 1975, Read & Daniels 3418 (CEPEC, RB, US).

2. H. LITTORALIS L. B. Smith, Contr. Gray Herb. 129: 33, pl. 3, figs. 11-13. 1940.

3. H. STELLATA Schult. f. in R. & S. Syst. 7: 1251. 1830.

BRAZIL: ALAGOAS: Marechal Deodoro, Andrade-Lima s n (IPA, US).

4. H. ROSEA L. B. Smith & R. W. Read, sp. nov. A H. stellata Schult. f., cui affinis, inflorescentiae ramis inferioribus brevioribus, bracteis florigeris erectis vel suberectis minoribus, sepalis minoribus differt.

PLANT flowering over 5 dm high. LEAVES many in a broadly funnellform rosette; blades ligulate, over 9 cm wide, acute with a stout, dark terminal cusp, subdensely serrulate with dark antrorse and retrorse spines over 3 mm long, covered with inconspicuous white scales. Scape stout; scape-bracts unknown. INFLORESCENCE laxly subcylindric, ca. 3 dm long; primary bracts narrowly triangular, attenuate, much shorter than the spikes; branches ca. 1 cm long with a fascicle of 3 spikes at the end of each one; spikes sessile, stoutly subcylindric, 6-8 cm long, 25 mm thick. FLORAL BRACTS erect or suberect, ovate, acuminate to a slender spine, 2 cm long, exceeding the sepals, entire, pale lanate, rose in life, strongly nerved when dry; flowers strongly flattened with broad, thin wings on the posterior sepals and ovary. SEPALS ovate-triangular, attenuate to a slender spine, 12 mm long; ovary suborbicular; placentae apical. SEEDS fusiform, corrugated.

BRAZIL: BAHIA: In tree left standing after clearing of forest, near Ipatinga on escarpment, ca. 100 km from Itaju da Colonia toward Vitoria da Conquista, ca. 700 m alt, 17 January 1975, Read & Daniels 3429a (US, holotype; CEPEC, isotype).

5. *H. CATINGAE* Ule, Bot. Jahrb. 42: 195. 1908. Recent collections indicate this to be a highly polymorphic species with the following varieties:

1. Inflorescence subcylindric with short basal branches; mucro of the sepals to 1 mm long; scape-bracts imbricate.
  - 5a. Var. catinae.
1. Inflorescence pyramidal with long basal branches.
  2. Apex of the wing nearly or quite level with the apex of the sepal itself, not greatly extended vertically.
  3. Scape-bracts imbricate; spikes ellipsoid to short-cylindric.
    4. Floral bracts erect or suberect; sepals apiculate to short-mucronate.
      - 5b. Var. elongata.
    4. Floral bracts spreading and long-mucronate, making the spike bur-like; sepals with terminal mucro to 3.5 mm long.
      - 5c. Var. horrida.
    3. Scape-bracts shorter than the internodes; spikes ovoid.
      - 5d. Var. eximbricata.
  2. Apex of the wing produced vertically well above the apex of the sepal proper; spikes cylindric, to 9 cm long.
    - 5e. Var. extensa.

5a. Var. CATINGAE. *H. leucosteles* Gürke, Bot. Jahrb. 40, Beibl. 93: pl. 5. 1908, nomen, error for *H. catinae* and *Cereus leucosteles* Gürke.

BRAZIL: BAHIA: Cultivated Burle-Marx, 1975, Read & Daniels 3606 (US); Castro Alves, 26 January 1956, Lima 56-2497 (IPA).

5b. Var. ELONGATA M. B. Foster, Bromel. Soc. Bull. 11: 77. 1961. *H. caruaruensis* Harms, Notizblatt 11: 780. 1933.

BRAZIL: Cultivated, Jardim Botânico, Rio de Janeiro, 8 November 1948, Brade et al 19146 (RB, US); 1975, Read & Daniels 3617 (US); cultivated Burle-Marx, 1975, Read & Daniels 3606 (US).

PERNAMBUCO: Caruarú, 30 April 1932, Pickel 2900 (B, photo B 1194/31; type of *H. caruaruensis* Harms, IPA). BAHIA: Jacobina, 15 June 1939, Foster 86 (GH, type of *H. catinae* var. elongata M. B. Foster; US); Ituragu to Maracas, 18 October 1948, Foster 2456 (US); Milagres, Amargosa, 21 October 1948, Foster 2476 (US); Caravelas, cultivated, June 1959, R. G. Wilson s n (US).

5c. Var. HORRIDA (Harms) L. B. Smith & R. W. Read, comb. nov. *H. horrida* Harms, Notizblatt 12: 525. 1935.

BRAZIL: PARAIBA: Esperança, 25 Nov 1958, Moraes 1984 (US). PERNAMBUCO: Arco Verde, Serra do Pinheiro, 9 April 1955, Lima 55-2017 (IPA, US); Belo Jardim, November 1961, Mee 82 (SP).

5d. Var. EXIMBRICATA L. B. Smith & R. W. Read, var. nov. A var. catinae scapi bracteis quam internodiis brevioribus, inflorescentia pyramidata differt.



SCAPE-BRACTS shorter than the internodes, INFLORESCENCE pyramidal with long basal branches; spikes ovoid, 4 cm long. FLORAL BRACTS suberect. SEPALS with apex of wing nearly or quite level with apex of midnerve, pungent-apiculate, 7 mm long.

BRAZIL: BAHIA: Dry quartzite hillside with disturbed woodland on lower slopes and scrub above, 12-14 km north of Rio de Contas on road to Mato Grosso, 1200 m alt, ca. 13° 28' S, 41° 50' W, Serra do Rio de Contas, 17 January 1974, Harley et al 15263 (CEPEC, holotype; K, isotype).

5e. Var. EXTENSA L. B. Smith & R. W. Read, var. nov. A var. catingae inflorescentia pyramidata, spicis elongatis, sepalorum alis sursum extensis differt.

INFLORESCENCE pyramidal with long basal branches; spikes cylindrical, to 9 cm long. FLORAL BRACTS suberect. SEPALS strongly asymmetric, 8.5 mm long including the wing which extends vertically much above the apiculate apex of the sepal proper.

BRAZIL: BAHIA: 6 km from Filadelfia on the BAA 385 to Itiuba, 400 m alt, ca. 10° 45' S, 40° 04' W, 18 February 1974, Harley et al 16171 (CEPEC, holotype; K, US, isotypes).

6. H. VESTITA L. B. Smith, *Phytologia* 24: 446, pl. 5, figs. 9, 10. 1972.

BRAZIL: BAHIA: Above the 100 m falls of the Rio Ferro Doido, 18 km, east of Morro do Chapéu, 11° 32' S, 41° 10' W, Serra do Tombador, 20 February 1971, Irwin et al 30693 (NY, US); summit of Morro do Chapéu, 16 February 1971, Irwin et al 32287 (NY, US). MINAS GERAIS: Secondary forest on steep slopes, shallow lateritic clay at base of Serra da Piedade, ca. 35 km east of Belo Horizonte, road to Caete, 1600 m alt, 13 January 1971, Irwin, Harley & Onishi 30287 (NY, holotype).

7. H. HUMILIS L. B. Smith & R. W. Read, sp. nov. A H. vestita L. B. Smith, cui affinis, foliorum laminis angustioribus, scapi bracteae quam internodiis brevioribus differt.

PLANT flowering less than 6 dm high. LEAVES 12 or more in a broadly funnelform rosette, to 4 dm long; sheaths broadly ovate, 10 cm long, green and densely serrate near apex, elsewhere dark castaneous, brown-lepidote, and entire; blades ligulate, acute, 1-2 cm wide, pale-lepidote, laxly serrate with dark spines to 3 mm long. SCAPE erect, slender, red, white-lanate; scape-bracts elliptic, spine-tipped, shorter than the internodes. INFLORESCENCE cylindrical, very lax except at apex, tripinnate with most of the spikes in sessile fascicles of 3 each, 18 cm long, white-lanate; primary bracts ovate, spine-tipped, exceeding the lowest spikes; spikes sessile, ellipsoid, 2 cm long, 1 cm thick. FLORAL BRACTS suborbicular, mucronulate, ca. 10 mm long, nerved. SEPALS largely exerted above the floral bracts, strongly asymmetric with the large wing exceeding the midnerve, 5 mm long, short-connate, slightly auricled, the lateral ones obtusely carinate with the ovary.

BRAZIL: BAHIA: In thorn scrub near Plan Alto, 17 January 1975, Read & Daniels 3434 (US, holotype).

8. H. CASTELLANOSII L. B. Smith & R. W. Read, sp. nov.

A H. membranostrobilo Mez, cui affinis, inflorescentia majore, bracteis florigeris mucronatis, ovario late bialato differt.

PLANT flowering over 1.1 m high. LEAF 9 dm long, laxly and inconspicuously lepidote throughout; sheath elliptic, ample, 6 dm long, dark castaneous and entire toward base, green and laxly serrate toward apex with dark retrorse spines 2 mm long; blade ligulate, broadly rounded and spinose-apiculate, 8 cm wide. SCAPE erect, 9 mm wide, white-lanate; scape-bracts erect, ovate, pungent-apiculate, red, densely white-lepidote becoming more or less glabrous, the lower shorter than the internodes, the upper imbricate. INFLORESCENCE sublaxly cylindric, 2-pinnate with sessile spikes, 3 dm long, soon glabrous; axis slender, straight; primary bracts broadly ovate, acuminate to a slender spine, much shorter than the axillary spikes; spikes few-flowered, suborbicular, 25 mm long. Floral bracts ovate, subtruncate, mucronate, to 13 mm long, much exceeded by the sepals, nerved when dry; flowers suberect. SEPALS slightly asymmetric, narrowly subelliptic, mucronulate, 10 mm long, the lateral ones and the ovary broadly alate; petals bearing 2 highly adnate fimbriate appendages.

BRAZIL: BAHIA: Marau to Muta, 13 December 1967, Castellanos 27007 (HB, holotype).

9. H. MEMBRANOSTROBILUS Mez, Mart. Fl. Bras. 3, pt. 3: 269. 1891.

BRAZIL: ESPÍRITO SANTO: Santa Teresa, L. Seidel 51 in part (HBR); 6 Jan 1965, 60 (US).

10. H. BELEMII L. B. Smith & R. W. Read, sp. nov. A H. disjuncta L. B. Smith, cui affinis, scapi bracteis imbricatis, inflorescentia densa brevior differt.

LEAVES 6 dm long, obscurely pale-lepidote; sheaths elliptic, ca. 17 cm long, the apex green and sparsely serrate, elsewhere dark castaneous and entire; blades ligulate, acute, cuspidate, 3 cm wide, laxly serrate with dark antrorse spines to 3 mm long. SCAPE straight (?), 6 mm wide near apex, white-lanate; scape-bracts (upper) densely imbricate, lanceolate, pungent, red, obscurely pale-lepidote. INFLORESCENCE densely ovoid, 3-pinnate with spikes fasciated in the axils of the primary bracts, 8 cm long, obscurely pale-lepidote; primary bracts ovate, acute, pungent, exceeding the lower spikes, thin, nerved; spikes subglobose, few-flowered, 25 mm long. FLORAL BRACTS ovate, acute, pungent, 15 mm long, exceeding the sepals; flowers erect. SEPALS (young) 8 mm long, mucronulate, the lateral ones alate-carinate with the ovary; petals blue (! Belém); epigynous tube very short.

BRAZIL: BAHIA: Terrestrial in coastal woods, edge of Igarapé, Marau, 3 May 1968, Belém 3494 (US, holotype; IAN, NY, isotypes).

11. H. DISJUNCTA L. B. Smith, Contr. Gray Herb. 129: 33, pl. 3, figs. 7-10. 1940.

BRAZIL: BAHIA: Itapé, Itabuna to Itaju da Colonia, 16 January 1975, Read & Daniels 3424 (CEPEC, RB, US).

12. H. BLANCHETII (Baker) E. Morr. ex Mez, Mart. Fl. Bras. 3,

pt. 3: 267. 1891.

BRAZIL: BAHIA: Castro Alves, 26 January 1956, Lima 56-2499 (IPA); Itabuna, 11 December 1967, Pinheiro 465 (CEPEC); 13 January 1975, Read & Daniels 3408 (CEPEC, RB, US). ESPÍRITO SANTO: Rio Jucú near Domingo Martins, 14 June 1939, cultivated Aug 1948, Foster 214 (US).

13. H. MINOR L. B. Smith, Contr. Gray Herb. 129: 34, pl. 3, figs. 17, 18. 1940.

14. H. SALZMANNII (Baker) E. Morr. ex Mez, Mart. Fl. Bras. 3, pt. 3: 271, pl. 60, fig. 2. 1891.

BRAZIL: Didrichsen 3977 (C). BAHIA: Pôrto Seguro, 19 Mar 1968, Vinha & Santos 68 (UB, US).

15. H. PABSTII L. B. Smith & R. W. Read, sp. nov. A H. salzmannii (Baker) E. Morr. ex Mez, cui affinis, planta florifera multo minore, spicis ovoideis, sepalis mucronulatis differt.

PLANT flowering over 1.2 m high. LEAF over 9 dm long, covered with appressed, pale, brown-centered scales; sheath elliptic, 17 cm long, entire, dark castaneous; blade ligulate, acute, cuspidate, 6 cm wide, laxly serrate with dark, antrorse, 5 mm long spines. SCAPE erect, 5 mm thick, white-lanate; scape-bracts imbricate, ovate, acuminate, pungent, chartaceous (dry), lanate at first, all but the lowest entire. INFLORESCENCE amply and very laxly pyramidal, 4-pinnate, 55 cm long; axes very sparsely white-lanate at anthesis; primary bracts like the upper scape-bracts, much shorter than the axillary branches; spikes broadly ovoid, few-flowered, 15-20 mm long, exceeding their subtending bracts. FLORAL BRACTS broadly ovate, subacute, mucronulate, 8-10 mm long, nerved, obscurely white-lepidote; flowers erect, strongly flattened and broadly bialate on ovary and sepals combined. SEPALS asymmetric, suboblong, 7 mm long, short-connate; ovary subsemiorbicular; epigynous tube short but distinct.

BRAZIL: BAHIA: 16 km from Santa Cruz da Vitoria, 15 December 1967, Castellanos 27049 (HB, holotype; US, photo).

16. H. AUGUSTA (Vell.) E. Morr. Catal. 9. 1873.

BRAZIL: SANTA CATARINA: Vargem Grande, Florianópolis, 11 September 1968, Klein & Bresolin 7924 (HBR).

17. H. ERIANTHA (Brongn. ex Baker) Mez, Mart. Fl. Bras. 3, pt. 3: 269. 1891.

18. H. EDMUNDOI L. B. Smith & R. W. Read, sp. nov. A H. utriculosa Ule, H. ramageana Mez et H. ridleyi (Baker) Mez, quibus affinis, foliorum laminis angustioribus, scapi bracteis quam internodiis brevioribus, inflorescentia subcylindrica differt.

PLANT flowering 1.5 m high. LEAVES tubular-rosulate, to 45 cm long, covered with pale appressed, dark-centered scales; sheaths elliptic, ample, 20 cm long, entire or slightly serrate near apex, the lower half dark castaneous; blades ligulate, rounded and pungent-apiculate, 4 cm wide, laxly serrate with dark, spreading, 3 mm long spines. SCAPE erect, slender, soon glabrous; scape-bracts erect, shorter than the internodes, lanceolate, apiculate. INFLORESCENCE laxly subcylindric with

short basal branches, 5-7 dm long; axes slender, soon glabrous; primary bracts like the upper scape-bracts, shorter than the axillary branches; branches including spikes 5-10 cm long; spikes subglobose to ellipsoid, few-flowered, 2-3 cm long, white-lanate, exceeding their subtending bracts. FLORAL BRACTS broadly ovate, broadly acute or rounded and mucronulate, to 10 mm long. SEPALs exerted, strongly asymmetric with a broad wing extending above the midnerve, 6 mm long; petals bearing 2 highly adnate, fimbriate scales; ovary 4 mm high; epigynous tube almost none; placenta apical.

BRAZIL: BAHIA: Cultivated Burle-Marx, 12 February 1968, E. Pereira s n (HB, holotype; US, photo); 1975, Read & Daniels 3605 (US); 3607 (US).

Note: Read & Daniels 3604 is a sport of the above in which the larger spikes have elongated between all but a few apical flowers and thus become very lax, yet the flowers remain complanate as in a dense spike.

19. H. UTRICULOSA Ule, Bot. Jahrb. 42: 196. 1908.

BRAZIL: BAHIA: Maracas, Bokermann s n (NY); Barra da Estiva, ca. 13° 35' S, 41° 18' W, 28 January 1974, Harley 15571 (CEPEC, K, US); Mucugê, ca. 13° 01' S, 41° 21' W, 4 February 1974, Harley 15980 (CEPEC, K, US).

20. H. RAMAGEANA Mez, DC. Monogr. Phan. 9: 127. 1896.

BRAZIL: RIO GRANDE DO NORTE: Mae Luiza, 18 December 1952, Tavares 52-62 (IPA). PERNAMBUCO: São Lourenço, May 1936, Sobrinho 143 (IPA); Dois Irmãos, Recife, 27 April 1955, Lima 55/2042 (IPA, US). BAHIA: Marau, 22 January 1965, E. Pereira 9625 & Pabst 8514 (HB, US); Santa Cruz de Cabralia to Porto Seguro, 19 March 1968, Vinha & Santos 67 (UB, US); Marau, Belém 3493 (NY). MINAS GERAIS: Divisópolis, November 1962, M. Magalhães 17463 (RB).

21. H. RIDLEYI (Baker) Mez, Mart. Fl. Bras. 3, pt. 3: 266. 1891.

BRAZIL: PERNAMBUCO: Campina dos Marcos, Iguaraçu, 29 May 1955, Lima 55-2062 (IPA, US); 55-2063 (IPA, US); 55-2064 (IPA, US); Marco do Campinas, November 1961, Mee 81 (SP).

HOHENBERGIOPSIS L. B. Smith & R. W. Read, gen. nov. Herbae perennes, caules; foliis armatis; scapo manifesto; inflorescentia ramosa, ramis ultimis strobiliformibus; floribus sessilibus; petalis nudis, inter sese liberis sed filamentorum tubum adnatis; pollinis granulis in tetrīs; ovario omnino infero; tubo epigyno nullo; ovulis caudatis. Species unica:

H. GUATEMALENSIS (L. B. Smith) L. B. Smith & R. W. Read, comb. nov. Hohenbergia guatemalensis L. B. Smith, Lilloa (Contr. Gray Herb. 137:) 6: 382, pl. 1, figs. 1-4. 1941.

MEXICO (?): Cultivated Louis Herring, 17 September 1974, Beach 74-107 (US).

GUATEMALA: Cultivated, June 1975, Wiley s n (US). ALTA VERAPAZ: On tree in dense wet forest, mountains east of Tactic, on road to Tamahú, 1500-1600 m alt, 9 April 1939, Standley 71169 (F, holotype); 71364 (F).

In habit Hohenbergiopsis is distinguishable from Hohenbergia only on a species level in a full key. However, to be strictly logical in using petal-appendages as the major generic distinction in the Bromelioideae, it becomes necessary to make it a separate genus.

NEOREGELIA subgenus HYLAEICUM (Ule) L. B. Smith & R. W. Read, comb. nov. Nidularium subgenus Hylaeicum Ule, Verh. Bot. Brandenb. 48: 133. 1907. Areelia subgenus Hylaeicum (Ule) Mez, Pflanzenreich IV. 32: 40, 52. 1934. Neoregelia subgenus Amazonicae L. B. Smith, Phytologia 15: 191. 1967.

United States National Museum, Washington, D. C., U. S. A.

#### HERBARIUM NOTES, V

Lyman B. Smith

BEGONIA MICROPHYLLA A. DC. var. MAJOR L. B. Smith, var. nov.  
A var. microphylla foliis plus quam duplo majoribus differt.

Leaves to 35 mm long, otherwise indistinguishable from var. microphylla.

VENEZUELA: LARA: Dist. Morán: Forest along the Río Tocuyo, south of Humocaro Alto, 9° 33' N, 70° 02' W, 1300 m alt, 13 Oct 1974, Steyermark & Espinoza 111050 (VEN, holotype).

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## Plate I

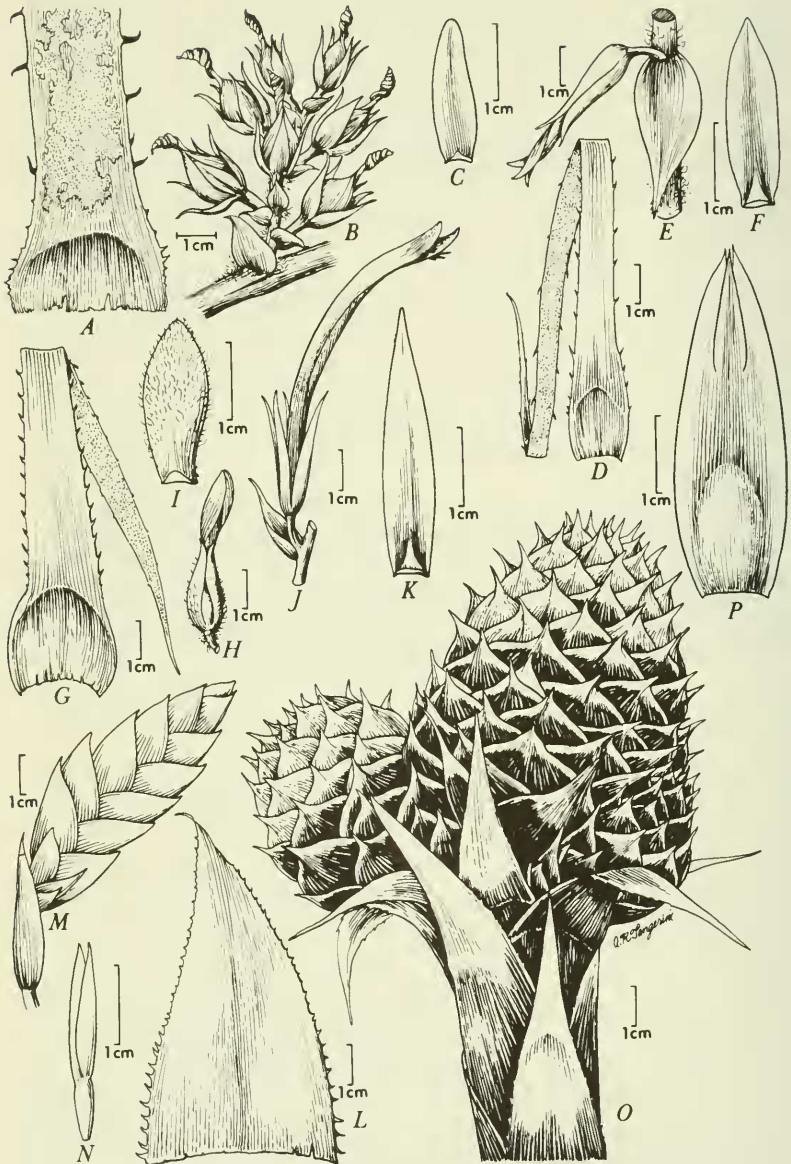


Fig. A-C: *Puya exuta*. D-F: *P. cleefii*. G-I: *P. dichroa*.  
 J-K: *Pitcairnia stolonifera*. L-N: *Aechmea strobilina*.  
 O-P: *Ae. digitata*.



## Plate II



Fig. A-B: *Hohenbergia rosea*. C-D: *H. humilis*.  
 E-G: *H. castellanosii*. H-J: *H. belemii*.  
 K-L: *H. pabstii*. M-N: *H. edmundoi*.